



IMPACT OF EXERCISE ON THE MENTAL HEALTH OF COLLEGE STUDENTS

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ABSTRACT

College life plays quite a crucial role in students' lives. This is a phase known to be shaping the future of the students. Such a sensitive phase is usually accompanied with inundating stress. While there are certain ways to deal with the stress, a person chooses one that suits him/her the most. Out of such ways, Exercise (as acclaimed) is one of the most commonly used one among the youth. Given that many health practitioners claim exercise to be a 'stress busting' activity, it is surprising to discern that only a few researches had been done yet to determine an evident relation between the two.

This research is based on dwelling on the presence and extent of influence of exercise on the mental health of college students by developing a Cross-Sectional Survey with felicitous questions. These surveys were filled by 80 college students enrolled under Panjab University. The recorded observations were analysed and results showed students who regularly indulged in physical activity were less stressed out than those with lesser frequency of physical exertion. Students with a regular routine of working out were least likely to be affected by stress and its symptoms such as anxiety, lack of motivation, frustration, etc., in comparison to those who were physically inactive. This study will contribute to give volume to such researches and claims which further engenders the scope of exercise as a therapeutic tool for coping with stress. Not just that, inculcating such habits in students may also aid in mollifying increasing suicidal rates among students.

KEYWORDS: Exercise, Stress, Mental Health, College Students.

1. INTRODUCTION:

Psychological Distress or Stress is an inevitable part of life. American Psychological Association¹ defines stress as "the physiological or psychological response to internal or external stressors. Stress involves changes affecting nearly every system of the body, influencing how people feel and behave". If mis-handled, it can cause adverse effects on the mental health such as depression, anxiety, memory loss, etc. Stress can affect all stratas of a population and evidently people from the age group 18-33 years old form the greatest part of it (APA, 2019)¹. The age category 18-33 years old highly consists of college going students. There are certain ways to cope up with stress like psychotherapies, taking breaks, distracting oneself, entertainment, etc., and each individual manifests the one that suits the best.

Exercise is an activity that involves physical movement, done in order to improve health and either induce or sustain a state of fitness. Exercise in the past has shown to be an effective strategy to tackle anger issues. Evidence supporting its role in handling stress has also been observed. James Swana analysed in the journal, *Psychology & Society*, 5. pp. 1-15 (Swan, James and Hyland, Philip (2012)² that regularly exercising over a relatively short period of time can bring about quite effective results in depression and anxiety symptomatology. An experimental study by Caterina Pesce et al. (Caterina Pesce, Caudia Crova, Lucio Cereatti, Rita Casella and Mario Bellucci, 2009)³ over 60 pre-adolescent participants indicated an exercise-induced benefit for memory performance and better control over hyperactivity among the children. Guy Faulkner in his research (Guy Faulkner and Stuart Biddle, 2001)⁴ concluded that enhancing congruence between common therapeutic strategies and exercise may facilitate the positive impact of exercise as an adjunct in therapeutic treatments.

These studies provided the foundation of how exercise can be linked as impactful onto the mental health of college going students. Psychological ailments such as stress, depression and anxiety are very common in the college going population, it is vital to study easy, cost effective and accessible methods of dealing with them. Students being full of energy and having a lifestyle supportive of a regular routine of exercising, are still not exploiting benefits out of it. This research studies the difference of level of mental congruence in students who workout regularly and the students who do not. The outcome of the study will provide the basis for enhancing the general adoption of a new, positive approach of promoting exercise in student life, thereby, ensuring healthier physical and mental conditions.

2. METHODOLOGY:

As the main purpose of the research is to study the impact of exercise on students' mental health, which is concluded to be affected by their regularity and frequency of exercise, it is difficult to record or be done by only observing. Thus, an exploratory quantitative approach was kept while conducting this Survey Research using specifically self-designed online survey (via Google docs) was chosen as the research method for this study. It provided everyone an opportunity to answer the questions and give reflection with confidentiality which was also cost-saving and time-efficient while executing the research.

The study required to seek data relating to a particular time(which in this case was the present time period) and from a particular section of the society. For this type of research to be executed it was most feasible to use a Correlational Survey under Cross-Sectional Survey type. This was done as for this study to identify a relation between two variables, i.e., exercise and mental health of students. In all, a total of 19 questions were asked. As this survey research demanded flexibility in order to address and study certain varied factors like perceptions, regularity, suggestions, etc., the questionnaire was designed with a mix of different scales including- Polar Questions, Likert scale, MCQ's, Checkboxes and Short Answer Text type questions.

The sample size for the research was 80 students of Panjab University (Campus and Affiliated Colleges), Chandigarh. The age range was not defined but averaged in the category 18-27. The sample was then equally divided into two major groups based on the frequency of working out each representing 40 participants. These two were further bifurcated into two subgroups each with equal representation of males and females (10 males plus 10 females = 20 participants per subgroup) based upon the intensity of their workout routines.

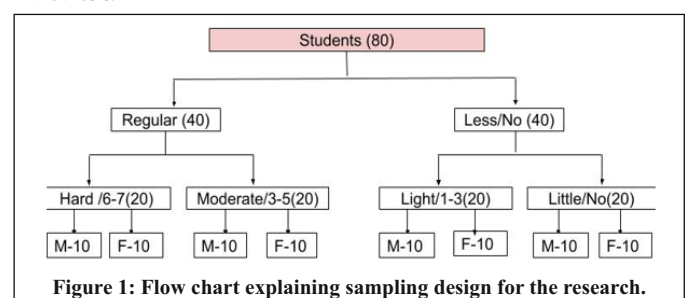
The criteria for major groups was:

| | |
|---------|-------------------------------|
| Group 1 | Regularly Working Out |
| Group 2 | Less or Irregular Working Out |

The criteria for subgroups was:

| | | |
|---------|------------|-------------------------------------|
| Group 1 | Subgroup 1 | Hard Exercise/Sports (6-7 days) |
| | Subgroup 2 | Moderate Exercise/Sports (3-5 days) |
| Group 2 | Subgroup 3 | light exercise/sports (1-3 days) |
| | Subgroup 4 | Little or No Exercise |

All the samples after segregation were studied for different aspects which were brought out by the questionnaire filled by them. These were represented using tables, figures like pie charts and graphs (mostly in percentages), platforms used for which were Google Spreadsheets, Ms Excel and summary by Google Forms in the thesis.



3. RESULTS:

The research aimed at studying the type of influence/impact (positive or negative) of exercising on the mental health of students in Panjab University, Chandigarh. The sample size for the purpose was 80 students with equal numbers of males and females.

3.1 The background questions:

The objective of the first three questions was to understand who the respondents are. The questions about name, gender and age, the results are illustrated in figure 2 and 3.

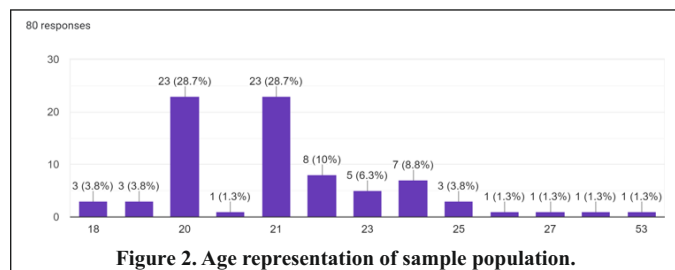


Figure 2. Age representation of sample population.

As mentioned earlier the age of respondents averaged in the range of 18-25. 28.7 percent of the sample population belonged to the age category of 20 years which paralleled the number of sample population following under age 21 years, the exact number of participants for the categories was 23 each. Some other samples in significant numbers belonged to age categories 22 years- 10 percent, 23 years- 6.3 percent, 24 years- 8.8 percent. Students who were 18, 19 and 25 years of age, contributed to 3.8 percent each to the sample. Ages 26, 27, 36 and 53 contributed to 1.3 percent of the sample.

This study was done on only students as it seeks to find the benefits that exercising regularly can bestow upon the mental stability of students even when confronted with stressful events like approaching deadlines, examinations, internships, project/thesis submissions, etc. Age was not the criteria to judge if a person is a student, the fact that the person was pursuing a course under Panjab University was the only criteria for it.

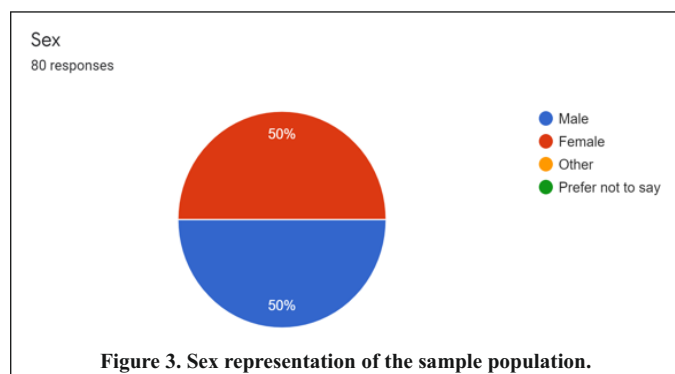


Figure 3. Sex representation of the sample population.

In order to remove aspects of gender bias in context of the ethics of this research, an equal number of samples of males and females was targeted. This not only makes the research more ethical but also helps in studying the issue equally for both the sexes.

3.2 Workout Frequency and Choices:

This part of the survey dealt with the information regarding the sample through which the researcher distributed the sample into decided categories (as mentioned earlier). It also manifested what percentage of the study sample chooses to workout/exercise under different influences- external and internal.

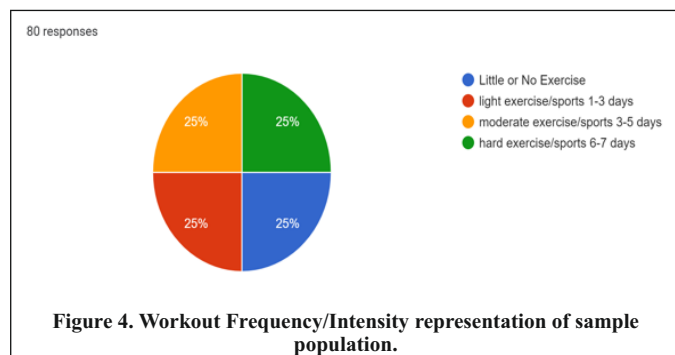


Figure 4. Workout Frequency/Intensity representation of sample population.

The figure 4 above represents the controlled variable that the researcher used in order to study the impact equally in accordance with the frequency of working out per week.

Four categories were made representing different intensity of exercising ranging from Little/No workout to Hard/6-7 days of working out with 20 (10 males and 10 females) students representing each one of them totalling up to 80 students. Hence, each category contributed to 25 percent of the sample size.

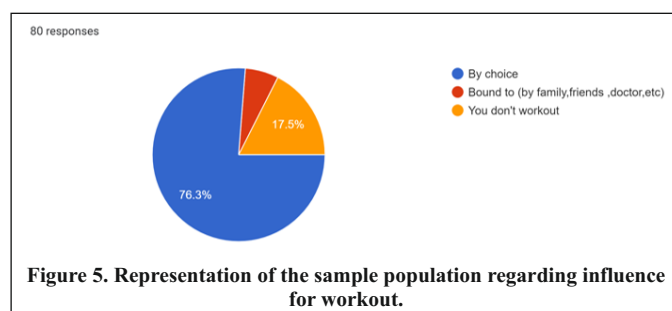


Figure 5. Representation of the sample population regarding influence for workout.

This pie chart represents responses to question number 5 which aimed to extract the fact if the respondents were influenced externally, i.e., was bound to do so as told by family, friends, doctor, etc, or internally, i.e., by their own choice and by what percentage. The sample population that worked out (even if in less frequency) due to their own choice was 76.3 percent and were internally motivated to do so. Whereas, 6.2 percent of those working out did so due to external influence of family, friends, doctor, etc and a total of 17.5 percent were those who did not workout at all even in a negligible amount.

This part of the study can also be inferred to bring out the fact that the majority of the sample who were working out were internally motivated and did workout as a choice in their lifestyle while only a small segment needed external factors to be motivated.

3.3 Irritability Level Check:

Students then were questioned to check how easily their irritation gets triggered or how easily they get stressed out in this part of the questionnaire. Then they were asked that if a stressful event approaches, what is their first reaction to it (Question 6 and 7).

Table 1. Distribution of students' likeness of getting irritated/stressed out- workout intensity wise

| Intensity | Very Easily | Easily | Neutral | Not so easily | Less likely to be stressed |
|-----------|-------------|--------|---------|---------------|----------------------------|
| Hard | 0 | 4 | 3 | 11 | 2 |
| Moderate | 0 | 5 | 5 | 6 | 4 |
| Light | 4 | 6 | 6 | 3 | 1 |
| None | 7 | 6 | 3 | 3 | 1 |

Table 1 here shows the distribution of different students' likeness or say probability of getting irritated who belong to different categories based on their intensity of working per week.

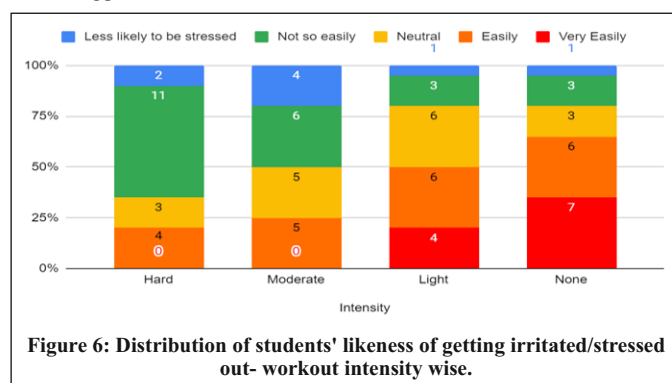


Figure 6: Distribution of students' likeness of getting irritated/stressed out- workout intensity wise.

As we are aware that most of the daily mental issues revolve mostly around the stress levels of a person and being very prone to be easily irritated or stressed out is a sign of weaker mental health.

Now considering the above Figure 6 which is a 100% stacked column chart, it was inferred that the trend of getting easily and very easily triggered starts to increase as we go from Hard frequency of workout to Little or None. This chart enables us to compare the irritability factor of the categorised sample and check if the irritability rate is higher in students with lesser working out frequency. Statistics that this figure put forward were-

1. Out of 20 students who had a Hard frequency workout routine, 11 students responded to not getting stressed out easily. 4 responded to be easily stressed out, 3 responded as being neutral at most times and 2 responded to less likely to be stressed. No student felt to be 'very easily'

triggered.

2. Out of 20 students who had a Moderate frequency workout routine, 6 said they do not get easily irritated/ stressed out. For both the options easily irritated/stressed out and neutral a same response of 5 students each was received whereas 4 responded that they were less likely to be stressed out at all. The response was the same as the Hard frequency in case of 'very easily' triggered option in this case as well which was 0.
3. Out of 20 students who had a Light frequency workout routine, 6 students reported to be 'easily' triggered and the same response was found for 'neutral'. 4 students responded that they get irritated/stressed out 'very easily'. A decline was observed in the number of responses for the options 'not so easily' and 'less likely to be stressed' with just 3 and 1 responses respectively.
4. Out of 20 students who had a Little/None frequency workout routine, 7 responded to get irritated/stressed out 'very easily' which was a significant increase as compared to those with 'Hard' frequency workout routine. Same type of increase was seen in those who got irritated/stressed out 'easily' with 6 responses. 3 students responded for 'neutral' whereas a decrease in the number of responses for the options 'not so easily' and 'less likely to be stressed' with just 3 and 1 responses respectively was also observed.

These stats launched this study into the desired direction and suggested that lack of regular exercise can be one important factor for degrading mental health of students. Also, the opposite scenario upholds great significance for the study which is that students exercising regularly showed more stability when it came to being triggered for irritation and stressful events.

Responses to Question 7, helped to back up the statements made in the previous paragraph. It was asked to see how differently the students from different workout categories cope up with stress.

Table 2. Difference in cope up strategies adopted by the students.

| Reaction | Intensity | | | |
|--|-----------|----------|-------|------|
| | Hard | Moderate | Light | None |
| Frustrated/Angered | 2 | 0 | 7 | 8 |
| Stressed/Sad | 1 | 1 | 4 | 11 |
| Slightly worried,tensed or feel like taking naps | 6 | 6 | 12 | 14 |
| Doesn't Really affects you | 5 | 4 | 2 | 2 |
| Planning out things and motivated | 7 | 6 | 4 | 4 |
| Up for the Challenge | 7 | 7 | 2 | 2 |

Table 2 above represents data arranged according to the responses of the students of what would be their reaction to an approaching stressful event.

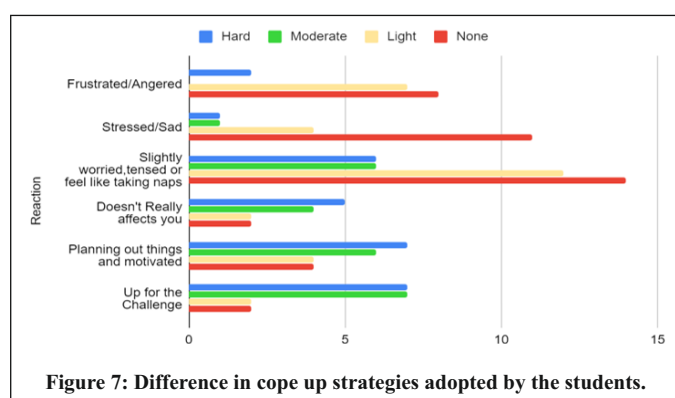


Figure 7: Difference in cope up strategies adopted by the students.

Figure 7 above represents a comparative study of responses made by the sample population when they answered question no. 7 which asked them of their reaction to an approaching stressful event like Exams, project deadline, extending, lockdown, difficult tasks, etc. In this question a condition enabled the students to respond with at least one option and upto maximum three options. The responses varied(as they differed with respect to their working out intensity) yet formed a certain kind of trend again pushing this study further into the desired direction. Following Inferences were made from this graph-

1. Students who belonged to the Hard category were more inclined towards coping up with that stressful event in a positive manner. 7 responses were recorded in the favour of being 'Up for the Challenge', 7 were recorded for 'Planning out things and motivated' which is a positive reaction, 5 were those who chose 'Didn't really get affected' by the

situation arised, 6 responses were recorded which suggested that they are likely to be 'Slightly worried, tensed or feel like taking naps', only 1 response was recorded for getting 'Stressed/Sad' followed by 2 responses for being 'Frustrated/ Angered'.

2. Students who belonged to the Moderate category were also inclined towards coping up with that stressful event in a productive manner. 7 responses were recorded in the favour of being 'Up for the Challenge', 6 were recorded for 'Planning out things and motivated', 4 were those who chose 'Didn't really get affected' by the situation arised, 6 responses were recorded which suggested that they are likely to be 'Slightly worried, tensed or feel like taking naps' and 1 response was recorded for getting 'Stressed/ Sad'. No response was recorded for being 'Frustrated/ Angered'.
3. Students who belonged to the Light category showed transitional change in coping up with that stressful event as they inclined more towards procrastination with 12 responses for 'Slightly worried, tensed or feel like taking naps'. 7 responses were recorded in the favour of being 'Frustrated/ Angered', 4 were recorded for getting 'Stressed/ Sad' and 4 were those who chose 'Planning out things and motivated'. Responses for 'Didn't really get affected' and 'Up for the Challenge' were recorded to be 2 each.
4. Students who belonged to the Little/None category were inclined more towards maladaptively (negatively) coping up with the stressful event. Stats showed that they tend to indulge into procrastination and be irritated/stressed out due to it. 14 students responded for getting 'Slightly worried, tensed or feel like taking naps', 11 responded for feeling 'Stressed/ Sad' and 8 students opted that they would behave in a(n) 'Frustrated/ Angered' manner. While the trend of maladaptive strategies boosted in this category, the trend of putting adaptive strategies to use seemed to be fading in this category with only 4 responses for 'Planning out things and motivated' and 2 responses for both 'Didn't really get affected' and 'Up for the Challenge'.

As we moved from Hard to None, again the stats suggested that exercise played a role in letting students to react to stressful activities in a positive manner.

3.4 Motivation Levels:

Motivation is typically defined as the force that accounts for the arousal, selection, direction, and continuation of behavior. Motivation means the desire and willingness to do something. Question 8 from the questionnaire was designed specifically to check for the motivational levels the students felt during the strenuous time of lockdown. The question demanded an answer to 'How motivated do you feel these days?' which helped in retrieving stats that showed how the motivational levels varied from student to student under their respective category of working out frequency considering an ongoing stressful time period caused by a pandemic).

Table 3. Difference in motivational levels of the students.

| Motivation Levels | Intensity | | | |
|----------------------|-----------|----------|-------|------|
| | Hard | Moderate | Light | None |
| Demotivated/Lazy | 1 | 0 | 3 | 9 |
| Not much | 2 | 0 | 9 | 4 |
| Somewhat Motivated | 11 | 14 | 6 | 4 |
| Completely Motivated | 6 | 6 | 2 | 3 |

Table 3 above represents data arranged according to the responses of the students to question 8 which was 'How motivated do you feel these days?'. The sample was allowed to answer this question by selecting just one option which determined their motivation levels during that time period. Ranging from Demotivated/Lazy to Completely Motivated, students had to choose from the following four options: Demotivated/Lazy, Not much, Somewhat Motivated and Completely Motivated.

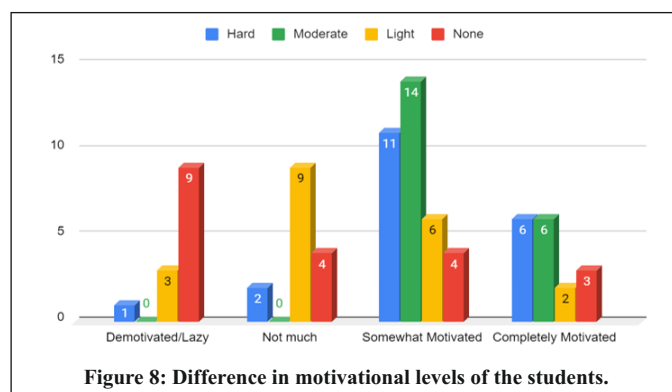


Figure 8: Difference in motivational levels of the students.

Figure 8 above represents a comparative study of responses recorded for question 8 as represented in Table 3 indicating their motivation levels of that time. The responses varied in a similar pattern like in the previous representations. Following Inferences were made from this graph-

1. Out of 20 students who had a Hard frequency workout routine, only 1 student responded for feeling 'Demotivated/Lazy' which was just 5 percent of them. 2 responded for feeling 'Not Much' motivated which was 10 percent, 55 percent of them responded for feeling 'Somewhat Motivated' with 11 students in number and 30 percent responded for feeling 'Completely Motivated' being 6 in number.
2. Out of 20 students who had a Moderate frequency workout routine, no responses were recorded for feeling 'Demotivated/Lazy' as well as for feeling 'Not Much' motivated. 70 percent of them responded for feeling 'Somewhat Motivated' with 14 students in number and 30 percent responded for feeling 'Completely Motivated' being 6 in number.
3. Out of 20 students who had a Light frequency workout routine, 3 students responded for feeling 'Demotivated/Lazy' which was 15 percent of them. A spike in students feeling 'Not Much' motivated was observed in this category with 9 responses summing up to 45 percent of them. 30 percent with 6 students responded for feeling 'Somewhat Motivated' while just 2 responses summing up to 10 percent of students described to be feeling 'Completely Motivated'.
4. Out of 20 students who had a Little/None frequency workout routine, 9 students responded, indicating a sudden spike, for feeling 'Demotivated/Lazy' which was 45 percent of them. 4 students responded for feeling 'Not Much' motivated holding 20 percent of them. 20 percent with 4 students responded for feeling 'Somewhat Motivated' while just 3 responses summing up to 15 percent of students described to be feeling 'Completely Motivated'.

The above statistics suggested a decrease in the motivation levels of students when we moved from Hard category to Little/None or say the vice versa (increase in motivation levels as we move from Little/None to Hard category of frequency of working out students). Responses for question 8 also indicated this study in the desired direction for the hypothesis.

3.5 Reasons for Exercising and Goals Expecting:

This part of the study dealt with a transition from benefits of exercising that the students were unaware of to the benefits that they were aware of and sought from it. Questions 9 and 10 are the ones which constitute this part of the study.

Table 4. Distribution of responses for students' reasons to workout.

| Reason to Workout | Responses | In Percentage |
|-------------------------------------|-----------|---------------|
| Improve Body Image | 48 | 60 % |
| Personality Enhancement | 38 | 47.5% |
| Stress Busting | 38 | 47.5% |
| Taking a break from Regular Routine | 15 | 18.8% |
| Professional Sports | 17 | 21.3% |
| Socializing | 11 | 13.8% |

Table 4 represents responses for question 9 which was 'Reason to workout for you is?', as it asked the students the benefits they seek from working out. This question allowed the students to answer at least one reason to maximum 3 answers. The data above have been provided in both units and percentages.

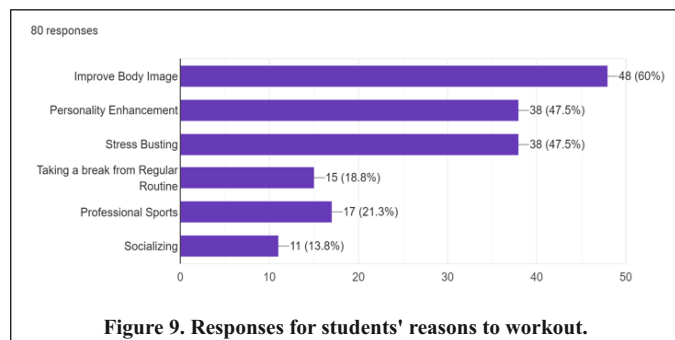


Figure 9. Responses for students' reasons to workout.

The horizontal bar chart in Figure 9 indicates responses for question 9 which demanded the reasons from students to work out. In simpler terms, it asked what pushes them to work out the most. Following inferences were made from this chart:

1. Starting from the most popular reason which was to 'Improve Body

Image', 60 percent of students with a response size of 48 wanted to improve their overall body image.

2. An equal weightage of responses to both the reasons- 'Personality Enhancement' and 'Stress Busting' was given by active students with 38 responses each holding 47.5 percent (each).
3. A percentage of 18.8 responded 'Taking a break from Regular Routine' as their reason for working out by 15 students in number.
4. Students who opted for 'Professional Sports' as one of their reasons to work out were 21.3 percent and 17 in number.
5. Socialising' being the least favourable reason for the students to work-out with 11 responses summing up to only 13.8 percent of the working out population.

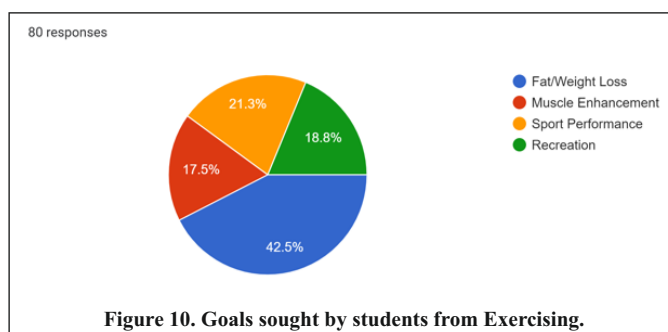


Figure 10. Goals sought by students from Exercising.

In addition to reasons for working out, the goals which the students aimed to achieve were also studied with the help of Question 10 which was, 'What goals do you seek from Exercising?' This question was designed to be answered by the complete sample population so that what goals students who don't workout much can seek by exercising. After receiving data for question 10 it was deduced that a majority of 42.5 percent of those working out wanted to reduce their weight by working out as they opted for 'Fat/Weight Loss' as their goal. 17.5 percent chose 'Muscle Enhancement' as their main goal, 21.3 percent opted for enhancement in 'Sports Performance' as their aim for exercising and 18.8 percent saw exercising as a method for inducing 'Recreation' into their lifestyles.

3.6 Sports and Mental Health- A Sportsman's Perspective:

Sports is an integral part in college life. It has its own benefits like scholarships, quotas, jobs, general fitness, career, etc. A sportsman's life revolves mostly around exercising and working out to improve their skills and abilities. As it turned out, 21.3 percent of sample students wanted to enhance their sports performance by exercising. So, in order to get a better insight on the impact of exercise on students it was necessary to know the perspective of students who identified themselves as sportsmen towards the relationship between mental well being and sports performance.

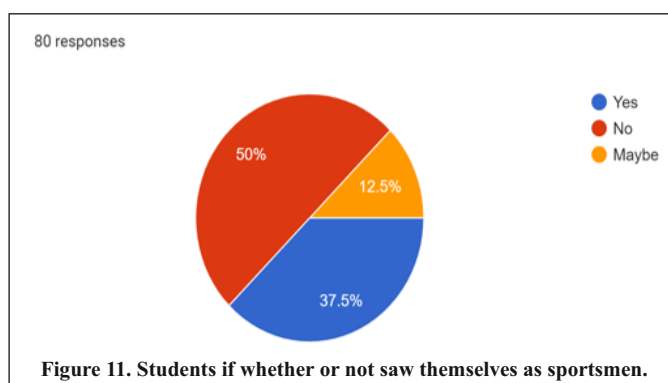


Figure 11. Students if whether or not saw themselves as sportsmen.

Figure 11 above represents the distribution of responses to question 11 which was 'Do you consider yourself a Sportsman?' asking the sample students if they considered themselves as a sportsman (sportsman) into a pie chart. It was a polar question with options- Yes, No and Maybe.

The information which this pie chart suggests is that 37.5 percent of the sample considered themselves as sportsmen and 50 percent of them did not. Whereas 12.5 percent could not decide if they were or not and went for 'Maybe'. These inferences take this study towards the next question.

Question 12 asks for the perception of those students who considered themselves as sportsmen towards the role of mental wellbeing in sports performance as it asked, 'If yes, up to what extent do you think mental well being is a must for sports performance?'

Table 5. Responses for Role of Mental Well Being in Sports Performance

| Perception | Responses | In Percentage |
|-----------------------------|-----------|---------------|
| Extremely Important | 34 | 47.9% |
| Important | 29 | 40.8% |
| Not so Important | 2 | 2.8% |
| One can perform well anyway | 6 | 8.5% |

Table 5 is a distribution table illustrating how sample sportsmen students from Panjab University perceive the role of mental well being in sports performance and by what percentage (of sample population).

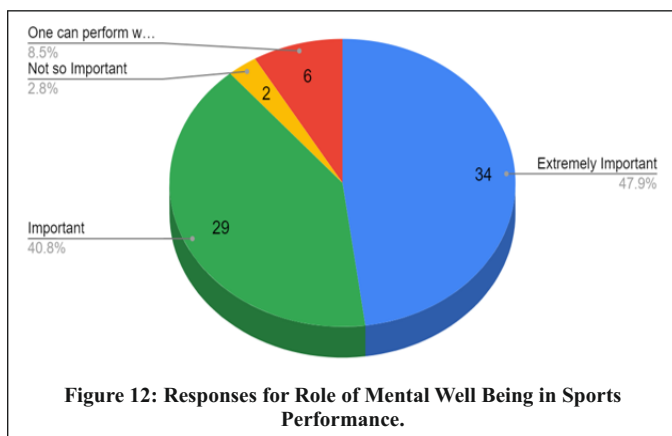


Figure 12 is a 3D pie chart efficiently conveying the distribution made in Table 4. The chart represents that a majority of 47.9 percent (34 responses) of the student sample considers the role of mental well being 'Extremely Important' followed by 40.8 percent (29 responses) of those who think it plays an 'Important' role. Students who do not think that being mentally well have any significance in sports performance is significantly low with just 2.8 percent (2 response) and 8.5 percent (6 responses) believed in 'Not so Important' and 'One can perform well anyway'.

This part efficiently puts forward that the sportsmen students of Panjab university are of the perception that being mentally fit is significant for the outcome in respect of their sports performance.

3.7 Mental Benefits of Exercise:

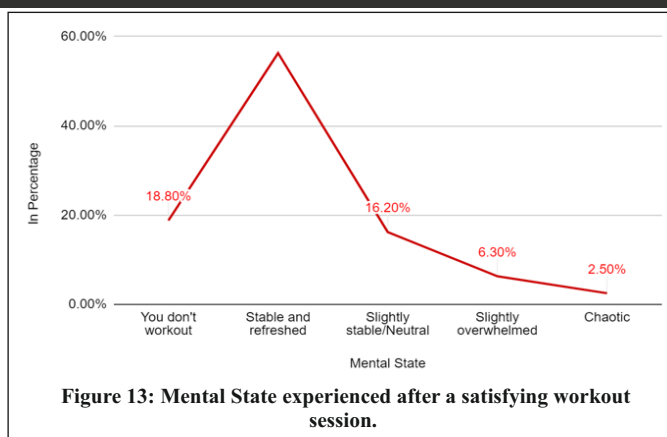
This segment of the research is the backbone of this survey research as it studies the perception that the sample had regarding the mental benefits or say what mental benefits the students experienced after exercising. Questions 13, 14, 15 and 16 from the survey are the ones which bring out the required data for understanding the above mentioned criteria for the research.

Table 6. Mental State experienced after a satisfying workout session.

| Mental State | Responses | In Percentage |
|-------------------------|-----------|---------------|
| You don't workout | 15 | 18.8% |
| Stable and refreshed | 45 | 56.3% |
| Slightly stable/Neutral | 13 | 16.2% |
| Slightly overwhelmed | 5 | 6.3% |
| Chaotic | 2 | 2.5% |

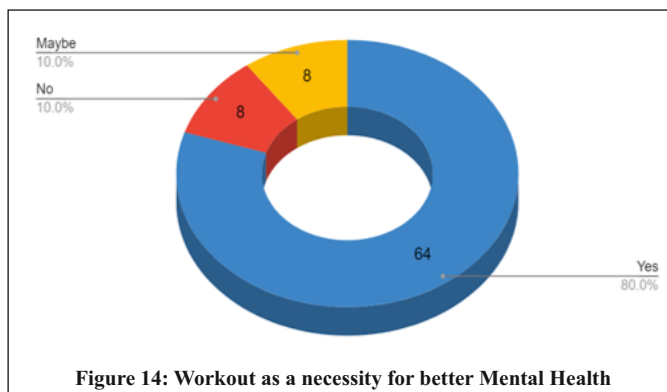
Table 6 is a distribution of responses that were made for question 13 which was 'What mental state is experienced by you after a satisfying workout session?' asked the sample to respond to the most relatable experience they get after a satisfying workout session from the given five options, which were:

1. You don't workout
2. Stable and refreshed
3. Slightly stable/Neutral
4. Slightly overwhelmed
5. Chaotic



In Figure 13 a Line chart effectively provides a visual representation of responses reported for question 13 using data from Table 5 into a trend line that starts from 'You don't workout' with 18.80 percent (15 responses). As we moved towards the option 'Stable and refreshed' a sudden spike was observed in the responses of 56.3 percent (45 responses). This is followed by a sudden decline of the line indicating the lower number of responses of 16.20 percent (13 responses) for experiencing 'Slightly stable/Neutral' after a decent workout session. This decline of responses continues when we move to the option 'Slightly overwhelmed' with just 6.30 percent (5 responses) and ends at an even lower point of 2.50 percent (2 responses) for experiencing a 'Chaotic' mental state. The trend line showed that most of the students experienced a stable and a refreshed state of mind after a satisfying workout session.

The research then headed to question 14 which was a polar question which asked the sample about their opinion on workout being a necessity for better mental health.



In Figure 14, responses for question 14, 'Are you of the opinion that workout is a necessity for better mental health?' have been illustrated in a 3D Doughnut Chart. The responses to this question were attempted by the complete sample population of 80 students and were studied to acknowledge their perception as a whole rather than in categories as done earlier in other parts of this study. It was observed that 80 percent (64 responses) of the students were of the opinion that 'Yes', workout is a necessity for better mental health whereas 10 percent (8 responses) of them opposed it by opting for a 'No' as their answer. 10 percent (8 responses) of students were of the opinion 'Maybe' and saw working out as a 50-50 chance to attain mental well being. This chart helped in taking a deeper glance at the perception of students towards the role of exercise in mental health.

Another question that unraveled another element of the perception of students towards the role of exercise in mental health was question 15, which was, 'How effective do you think is working out as a method of stress busting?' asking them how effective exercise had been in helping them to get rid of a disturbed mind state.

Table 7. Effectiveness of exercise as a method of stress busting.

| Effectiveness | Responses | In Percentage |
|------------------------------|-----------|---------------|
| Very Effective | 35 | 43.8% |
| Effective | 29 | 36.3% |
| Varies from person to person | 15 | 18.8% |
| Ineffective | 1 | 1.2% |

Table 7 is a tabular distribution of data recorded as responses from the sample population of 80 students for question 15 on a scale of Effectiveness range- Very Effective, Effective, Varies from person to person and Ineffective.

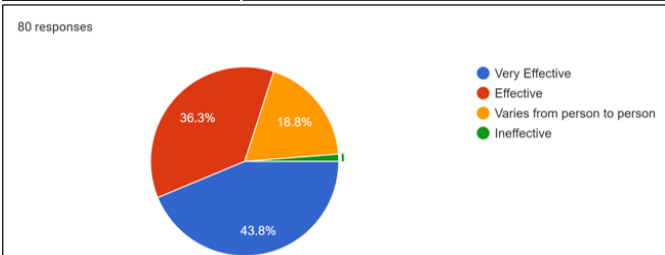


Figure 15. Effectiveness of exercise as a method of stress busting.

As shown in Figure 15, 43.8 percent (35 responses) students saw exercise as a 'Very Effective' method for stress busting. While 36.3 percent (29 responses) believed it to be an 'Effective' method for stress busting, 18.8 percent (15 responses) were of the opinion that it 'Varies from person to person' and only 1.2 percent (1 response) students considered exercising as an 'Ineffective' method for stress busting. It showed that more than 80 percent of the students consider exercising as an outlet of mental stress.

Further, in question 16 which was 'Do you agree on the statement "Motivation for regular life goals can easily be sought from physical activity (including regular sports)."', a statement was made and students were asked if they agreed with it and upto what extent. This question was a Likert Scale question as its options ranged from Strongly Disagree to Strongly Agree.

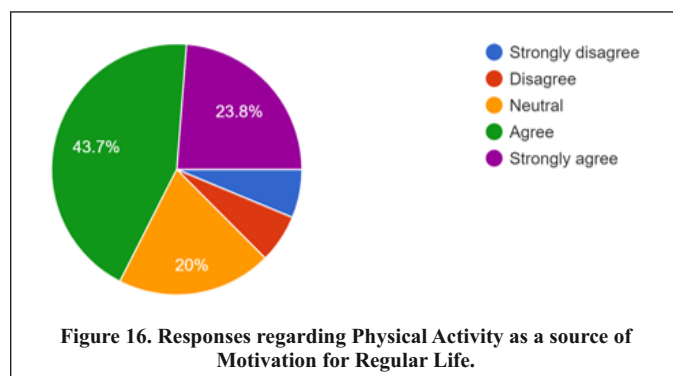


Figure 16. Responses regarding Physical Activity as a source of Motivation for Regular Life.

Responses regarding the statement, "Motivation for regular life goals can easily be sought from physical activity (including regular sports)." are shown in Figure 16. Students that Strongly Disagreed with the statement were 6.3 percent (5 responses) of the total sample, this outcome was the same for the number of students who went with 'Disagree' as their response. 20 percent (16 responses) students held a 'Neutral' opinion regarding the statement while 43.7 percent (35 responses) were the ones who 'Agreed' with it. A majority of 23.8 percent (19 responses) students were of the opinion that they 'Strongly Agree' with the statement. This chart showed that more than 65 percent responded in the favour of the notion that motivation for regular life goals can easily be sought from physical activity.

3.8 Exercise at Educational Institutes:

Role of education has always been important in shaping one's character involving his/her/their strengths and weaknesses. The importance of the education institutions for mental health, and the opportunities it provides for interventions have been evident for some time, and the last two decades have seen considerable growth in mental health research and interventions (Weare, 2010). The fact that students' many decisions get influenced by factors determined by educational institutions steers this research to this part of the survey which revolves around question 17 and 18.

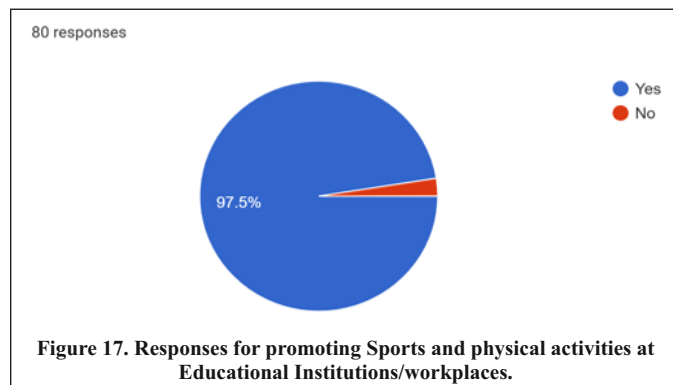


Figure 17. Responses for promoting Sports and physical activities at Educational Institutions/workplaces.

Figure 17 represents a pie chart depicting the responses to question 17 from the questionnaire, "Do you want your Educational Institutions/workplaces to pro-

mote Sports and physical activities in your locality?" which is a polar type question with only two options- Yes and No. Out of 80 students, 97.5 percent (78 students) responded 'Yes' and wanted promotion of physical activities like exercise and sports at education institutes and workplaces in their locality. And only 2.5 percent (2 students) were of different opinion and went with 'No' as their response to the question. This suggests that many students at Panjab University want their respective colleges/campuses to promote such activities not just because these are health promoting but also as they feel there is a need of doing so.

The second last question, question 18 holds the majority of significance as it provided with the data if whether or not working out has helped the students in maintaining their mental peace during stressful events and also in boosting their academic performance.

The question was, "Do you think working out has helped you in maintaining mental peace during stressful events and also, in boosting your academics?"

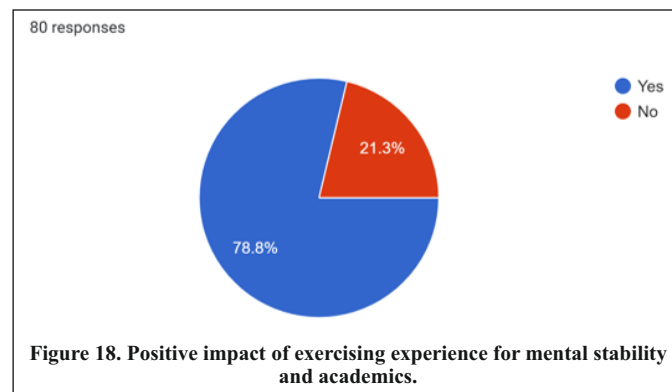


Figure 18. Positive impact of exercising experience for mental stability and academics.

Figure 18 represents a pie chart depicting the responses to question 18 which asked the students if working out ever helped them in maintaining their mental peace during a stressful period and also helped in boosting their academics. To this 78.8 percent (63 responses) answered 'Yes' that they had experienced such benefits from working out whereas 21.3 percent (17 responses) denied having such an experience, thus answering 'No' as their response.

The last question, question 19, was an open ended subjective question, which asked for any suggestions or opinions from the participant sample population that could have been useful for the research received very few responses and none of which were useful for the desired direction.

4. DISCUSSION:

Statistical data which was inferred in a step by step process, moving from one question to another threw light on the positive influence that exercise had on mental health of the students. A thorough empirical study was done and every question was interpreted giving out enough information to give an idea that up to what extent can exercise help in managing stress, maintaining calm during stressful events and in staying mentally fit. This section helped in getting results in order to keep the study inclined in the Results variation followed a similar trend in all the questions when the study evaluated results and moved from students with a Higher frequency of working out to a Lower frequency of working out which was that stats showed positive results for better mental state in students with higher frequency of working out than the ones with lower or no frequency of working out. Students who worked out more often had lesser irritability rates than those who did not. As the frequency of exercise dropped, irritability rates spiked. Students who did not work out at all or had a fewer frequency were more prone to use maladaptive coping strategies like escapism whereas students who worked regularly were prone to use adaptive coping strategies. For example, in this research, as shown in Figure 7, students who worked out regularly tend to adopt constructive methods like standing up to the challenge, planning things out and being least affected when inflicted upon with a stressful event whereas students with a lower frequency tried adopting poorer quality methods like getting frustrated and angry, getting depressed and sad and even procrastinating things causing a further damage due to delay. Motivation levels (during the stressful period of pandemic) were found to be higher in those with higher working out frequency than those with a lower one. Motivation levels in a student's life determine a lot of their decisions and can have serious psychological repercussions if they're not at an adequate level as this age quite close to the teenage or say adolescent age and the psychological mindset of the students is not fully mature and hence hinders at fully understanding the difference between what is right and what is wrong.

Top three reasons (out of six) for exercising in the sample population were- (a) Body Image Enhancement (b) Personality Enhancement and (c) Stress Busting. All these are psychological aspects that influence a student's mental health. Perception of sportsmen who can immensely relate with the study were taken in consideration which emphasised on the importance of mental well being in sports performance. General perceptions that all the working out population from the

sample had towards the relation of exercise were also taken in consideration in different forms like experiences and opinions. For example, when asked for the mental state experienced after a satisfying workout session, more than 70 percent of the sample population felt more mentally stable and refreshed while only about 9 percent ended up being mentally disturbed. Another case where more than 80 percent of the sample students determined exercising as an efficient method for stress busting which is quite significant. As the study moved further, it was revealed that a majority of the students believed that physical activity can play as a source of motivation for achieving life goals. In the later part of the survey study, it was found that regular exercising has helped 78.8 percent of students both in remaining mentally calm and in boosting their academic performance as well. Also, as many as 97.5 percent of the students suggested that educational institutes and local workplaces should also take initiatives promoting physical activity. This would not only promote an active and healthier lifestyle but also will aid in giving productivity a push. These results have set a certain structure to base the study of the objectives targeted in this research.

Some limitations of this research were- This research has been done in an ongoing stressful and chaotic period of a pandemic due to which most of the sample students were under self quarantine (could cause irregular body clock and mental instability) which may or may not have influenced their choices in the questionnaire. Possibility of answering questions under the influence of social desirability could have also acted as an influence for some of the respondents. For implementing such studies especially onto a population as large as the total students enrolled under Panjab University, results for a much larger sample size will prove more effective than a sample size of 80 students which was much smaller. But on a smaller scale, these results can also be found useful and easier to reflect upon.

5. CONCLUSION:

In conclusion, regular physical exercise benefited those who were regular when it came to their mental health. Exercise helped in controlling irritability rates in students of Panjab University. Regular working out aided students to effectively manage their stress and maintain better motivation levels. Association with a better mental state is one thing, but exercise also assisted the students in their scholastic achievements. Physical benefits like attaining a better physique, personality development and better channelization of stress/anger influence certain psychological aspects like better body image provides boost to self-esteem, enhanced personality uplifts the confidence and productive channelizing the rush of anger leads to satisfaction and better mental stability. To brief a statement on the impact of exercise on the overall mental health of students of Panjab University, it was found to be positive and benefitting. As for concluding highlights, the empirical analysis of data retrieved from the survey supported the hypothesis that students of Panjab University who are regularly working do not get easily stressed, physically active students have better stress coping capacity and physically active students have more mental stability than physically inactive students.

It is surprising to discern that despite the offered physiological health benefits, only few studies meeting acceptable standards of methodology have been done to explain the beneficial relationship physical activities can offer to psychological health (C. Barr Taylor, James F. Salli, Richard Needle, 1985)⁵. As a conclusion to this study, this research has a potential implementation of using exercise as a therapy (Swan, James and Hyland, Philip (2012)¹ in the field of treatment of psychological instabilities. This study holds to be true for a majority section of the population called 'Youth.'

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